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THE
CURRICULUM OF MODERN EDUCATION,

AND

THE RESPECTIVE CLAIMS OF CLASSICS AND SCIENCE
TO BE REPRESENTED IN IT CONSIDERED :

BEING THE SUBSTANCE OF TWO LECTURES DELIVERED AT THE MONTHLY
EVENING MEETINGS OF THE COLLEGE OF PRECEPTORS,
APRIL 11TH, & MAY 9TH, 1866.

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"Not to know at large of things remote
From use, obscure and subtle, but to know
That which before us lies in daily life,
Is the prime wisdom : what is more is fume,
Or emptiness, or fond impertinence,
And renders us, in things that most concern,
Unpractised, unprepared, and still to seek." MILTON.

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"... So each study in its turn can give reasons why it should be cultivated to the utmost. But all these very arguments are met by an unanswerable fact, that our time is limited. It is not possible to teach boys everything."

"If it is attempted, the result is generally a superficial knowledge of exceedingly little value, and liable to the great moral objection, that it encourages conceit and discourages hard work. A boy who knows the general principles of the study, without knowing its details, easily gets the credit of knowing much, while the test of putting his knowledge to use will quickly prove that he knows very little. Meanwhile he acquires a distaste for the drudgery of details, without which drudgery nothing worth doing ever yet was done."—DR. TEMPLE'S *Answer to Questions of the Commissioners on Public Schools*.

"If we are to choose a study which shall pre-eminently fit a man for life, it will be that which shall best enable him to enter into the thoughts, the feelings, the motives of his fellows."—*Ibid*.

"All education really comes from intercourse with other minds. The desire to supply bodily needs and to get bodily comforts would prompt even a solitary human being (if he lived long enough) to acquire some rude knowledge of nature. But this would not make him more of a man. That which supplies the perpetual spur to the whole human race to continue incessantly adding to our stores of knowledge; that which refines and elevates, and does not educate merely the moral, nor merely the intellectual faculties, but the whole man, is our connection with each other; and the highest study is that which most promotes this connexion, by enlarging its sphere, by correcting and purifying its influences, by giving perfect and pure models of what ordinary experience can, for the most part, show only in adulterated and imperfect forms."—*Ibid*.

"The classic life contains precisely the true corrective for the chief defects of modern life. The classic writers exhibit precisely that order of virtues in which we are apt to be deficient. They altogether show human life on a grander scale, with less benevolence, but more patriotism; less sentiment, but more self-control; of a lower average of virtue, but more striking individual examples of it; fewer small goodnesses, but more greatness and appreciation of greatness; more which tends to exalt the imagination and inspire high conceptions of the capabilities of human nature. If, as every one must see, the want of the affinity of these studies to the modern mind is gradually lowering them in popular estimation, this is but a confirmation of the need of them, and renders it more incumbent on those who have the power, to do their utmost to aid in preventing their decline."—JOHN STUART MILL.

"We would have classics and logic taught far more really and deeply than at present, and would add to them other studies more alien than any which yet exist to the 'business of the world,' but more germane to the great business of every rational being—the strengthening and enlarging of his own intellect and character."—*Ibid*.

"In nations, as in men, in intellect as in social condition, true nobility consists in inheriting

what is best in the possessions and character of a line of ancestry. Those who can trace the descent of their own ideas and their own language through the race of cultivated nations, who can show that those whom they represent or reverence as their parents have everywhere been foremost in the field of thought and intellectual progress: these are the true nobility of the world of mind; the persons who have received true culture; and such it should be the business of a liberal education to make men."—ANON.

"The Ancient classics would not be worse, but better taught in the highest forms, did the pupil receive a more general culture in his early course."—DR. HODGSON, *"Classical Instruction," an Article reprinted from the Westminster Review, Oct. 1853.*

"It is the early age at which classical studies are begun that, rendering the work at once tedious and unprofitable, necessitates so terrible an expenditure of time, and prevents their successful prosecution. Difficulties which are now surmounted, if at all, with infinite labour and many tears; details which are now mastered, if at all, by children who can have but little comprehension of their meaning and purpose, and but little motive to mental effort, would afford only an easy and a pleasant exercise to minds more mature and better prepared."—*Ibid*.

"I claim for the study of physics the recognition that it answers to an impulse implanted by nature in the human constitution, and he who would oppose such study must be prepared to exhibit the credentials which authorize him to contravene nature's manifest design."—*On the Importance of the Study of Physics as a Branch of Education for all Classes*. By PROFESSOR TYNDALL.

"Leave out the physiological sciences from your curriculum, and you launch the student into the world undisciplined in that science whose subject matter would best develop his powers of observation; ignorant of facts of the deepest importance for his own and others' welfare; blind to the richest sources of beauty in God's creation; and unprovided with that belief in a living law, and an order manifesting itself in and through endless change and variety, which might serve to check and moderate that phase of despair through which, if he take an earnest interest in social problems, he will assuredly, sooner or later, pass."—*On the Educational Value of the Natural History Sciences*. By PROFESSOR T. H. HUXLEY.

"J'aime les sciences mathématiques et physiques; chacune d'elles, l'algèbre, la chimie, la botanique, est une belle application partielle de l'esprit humain; *Les Lettres, c'est l'esprit lui-même*; l'étude des lettres, c'est l'éducation générale qui prépare à tout, l'éducation de l'âme."—*Napoleon I., quoted by DR. HODGSON.*

"Wenn uns unser Schulunterricht immer auf das Alterthum hinweist, das Studium der griechischen und lateinischen Sprache fördert, so können wir uns Glück wünschen, dass diese zu einer höheren Cultur so nöthigen Studien niemals rückgängig werden."—GÖTTE.

PREFACE.

THE following pages contain the substance, with some alterations and additions, of two Lectures lately delivered at the College of Preceptors, and the writer seeks by the publication of them the suffrages of that larger audience with which lies the ultimate decision in discussions of this kind.

The question of the curriculum is daily becoming more and more important. The demand that it shall represent, in a far greater degree than it has hitherto done, the wants and wishes, the active energies, and in short the spirit, of the age, cannot be, and ought not to be, set aside. This claim, which involves particularly the pretensions of physical science to be represented in the curriculum, is much strengthened by the consideration, that science furnishes, when properly taught, a kind of educational training of special value, as a complement to that of language. The writer has attempted to show, that science teaches better, that is, more directly and soundly, than any other study, how to observe, how to arrange and classify, how to connect causes with effects, how to comprehend details under general laws, how to estimate the practical value of facts. Having, however, dealt out this measure of justice to science, he maintains that the difficulties which lie in the way of the attainment of these valuable results, by means of school education, have not yet been overcome; and that even if they were, and science were fully admitted into the curriculum,—which ought to be the case,—that the classical and literary training is better adapted to the development of the whole man than the scientific, and should therefore take the lead. In pursuing this argument, he has been led specially to deal with two fallacies, which, under a variety of forms, are extensively prevalent at present, and, by their evil influence, tend very much to hinder the cause which they are, apparently, designed to promote. The first is, That because there is so much to know in the world, we are bound to try to make our children learn it all. The second is, That because there is so much to do in the world, we ought to force all kinds of business upon children's attention beforehand, by way of preparation for it; in other words, that the *omne scibile* and the *omne facibile* (to use a barbarous Latin word) ought to be comprehended in every good curriculum of education. If he has succeeded in exploding these fallacies, and in making good his own proposition, that all true education involves, fundamentally, training, and training of a kind that is quite incompatible with the claims of any system in which *accumu-*

lation is the first principle, and *special preparation* the second, he hopes to gain the thanks of all judicious and really competent authorities in science; of all who mean by teaching science, training the mind to scientific method, to habits of investigation, and the diligent search after truth.

There can be little doubt that the recent Report on the results of classical teaching in our public schools, and especially in the case of Eton, has done much to strengthen the cause of those who wish to see a reform in the curriculum. Few men, perhaps, at the head of public institutions have ever stood in a more humiliating position than that occupied, about four years ago, by the Head-Master of Eton, who, being under examination before the Commission on Public Schools, could only say, in reply to the following pungent remarks of Lord Clarendon, the chairman, that he was "sorry";—thus allowing the full force of the charges implied. "Nothing can be worse," said his Lordship, "than this state of things, when we find modern languages, geography, history, chronology, and everything else which a well-educated English gentleman ought to know, given up, in order that the full time should be devoted to the classics; and at the same time we are told, that the boys go up to Oxford not only not proficient, but in a lamentable state of deficiency with respect to the classics."

It is not to be wondered at, that those who were before discontented with the established course of study in our public schools, became, after such a statement of facts, amply borne out as it was by the evidence, so indignant, as to demand, in the interests of philanthropy as well as science, that the system which had borne such fruits should be not only degraded, but deposed. This violent reaction cannot, however, be sustained. The abuse must not be confounded with the use. It may be true that very little besides classics is taught at Eton, and that *they* are not learnt; but this is no argument against either the theory or the practice of classical instruction. But while the present writer, who has had long experience in teaching, defends generally that theory and practice, he believes that the time is come for such a modification of its working, at least in middle-class schools, as will admit of the honourable introduction of science into the curriculum. It is then as a friend, and not an enemy, to science, that he has endeavoured to clear the ground of some of the frivolous and damaging arguments which theorists have imported into the discussion, and to plead that it shall be so taught as to make it a real mental exercise. Thus introduced as a coordinate discipline, it would prove a most valuable ally in education, and take its proper place among the great elements which are moulding the civilisation of the age.

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FROM the time when the idea was first conceived of interfering with the natural liberty of children, and setting them down on benches or on the ground to "learn," the question of what they should be taught could not fail to be one of great interest. An inquiry into the details of the various curricula arranged for the purpose of instruction by the wise men of the different nations of antiquity, would no doubt elicit much that would be valuable for the purpose of a writer on the History of Education, but opens up far too wide a field for our present limits. It may, however, be observed generally, in passing, that the scientific or practical element seems to have prevailed more in the primary schools of Egypt, India, Phœnicia, and Persia; the linguistic or literary in those of Judea, China, Greece, and Rome. Exception may, no doubt, be taken to this general statement, which, however, I must leave in its vagueness, without even a momentary effort to estimate the comparative value of the various curricula in their relation to the spirit and character of the respective nations which adopted them; and without even contrasting, as educational products, Plato, the pupil of Socrates, on the one side, and Alexander the Great, the pupil of Aristotle, on the other.

Descending, then, as at a leap, to the commencement of the Middle Ages, in Europe, we find the *omne scibile* comprehended, for the purpose of teaching, in two groups: the Trivium, consisting of Grammar, Logic, and Rhetoric; and the Quadrivium, of Arithmetic, Music, Geometry, and Astronomy. These subjects were designated by Cassiodorus, the literary adviser and friend of Theodoric, the "seven pillars" hewn

out by Wisdom to build her house upon.* The structure, however, then, and for a thousand years after, remained unfinished; and even at the present day it must be acknowledged that Wisdom's house of education is by no means distinguished for symmetrical beauty and completeness. In the rivalry which, not unnaturally, arose between these two courses of study, it would appear that the physical or strict sciences were usually defeated; for, either from indolence or distaste, the foundation of the Trivium, to which precedence in education was considered due, was generally so long in laying that the pupil rarely reached what was then treated as the higher course. Practically, indeed, in the lower schools, no attempt was made to go much beyond "Grammar," which, in connection with the study of Latin alone at first, and subsequently of Greek, with a little reading, writing, and arithmetic, formed the common course for English boys in the fourteenth, fifteenth, and sixteenth centuries. If the curriculum of school education is to be considered as reflecting the spirit of the age, which, however, is not, as we see in our own case, a fair criterion, it would appear that physical science was in those times, if not altogether neglected, at least treated with indifference; for not only in schools, but even in the universities, the quadrivials were, as Harrison remarks, "smallie regarded."† This state of things, continuing almost unaltered to the seventeenth century, roused the indignation of Milton, who denounces

* "Wisdom hath builded her house: she hath hewn out her seven pillars." (Prov. ix. 1.)

† Harrison's "Description of England," prefixed to Holinshed's Chronicle, 1577.

“the haling and dragging of our choicest and hopefulest wits to that asinine feast of sow-thistles and brambles, which is commonly set before them as all the food and entertainment of their tenderest and most docible age ;” while Cowley, rather later, pleads for the initiation of children into “the knowledge of things as well as words,” and for the “infusing knowledge and language at the same time into them.” Both these eminent men constructed schemes, on paper, for revolutionizing the existing curriculum in accordance with their views. Inasmuch, however, as they were in no respect themselves the fruit of the system they advocated, nor recommended it (I allude specially to Milton) by their own practice, the public generally seems to have attached little importance to their views, and certainly showed no desire to adopt them.

After their days, the established system was occasionally complained of (notably by Locke, and Clarke, and more recently by Sydney Smith) ; but within the last fifty years, various causes have tended to strengthen the assailants and give piquancy to the strife ; and at the present moment, more than ever before, the advocates of the old and new systems respectively are pertinaciously presenting their claims to the arbitration of the public. The maintenance of a hostile feeling is, however, much to be deprecated. This question may be, it is hoped, dispassionately discussed ; and for myself, though advocating the retention of much of the old system, I am, as will be seen, strongly impressed with the great claims of science, and disposed to recommend a fair and liberal compromise. I cannot but think that a curriculum framed in such a way as to retain the sound discipline of the old classical course, and to embrace the vivifying influences of the scientific element, would prove advantageous to both. Science, judiciously and thoroughly taught, supplies a training of a different kind from that supplied by classics, and of a kind especially adapted to correct the defects of the latter. This has been, indeed, to some extent, admitted by the general introduction of mathematics into the curriculum. It will, however, be shown that pure mathematics are not sufficiently comprehensive for the purpose. The observational and experimental sciences, besides being more generally inviting as a study than mathematics, are re-

commended, too, by their much closer connection with the interests and happiness of mankind. The fact cannot be denied, that our general school curriculum includes much that is not practically available in the world for which it is by theory a preparation, and excludes much that is ; that it rests mainly on the traditions and experience of the past ; and that it does not appear to keep pace, *pari passu*, with the actual life, the feelings, and hopes, and aspirations of the present. If these admissions, literally interpreted, are to be considered sufficient causes for condemnation, the question is at once decided, and society has only to order the delinquent for execution without delay. Before, however, the matter is thus summarily disposed of, the defendant should, and indeed must, in all fairness, be allowed to plead his cause at the bar of reason and common sense. In the case of this as of other time-honoured institutions, it will probably be found that we are not so very much wiser than our fathers as we may at first sight be disposed to flatter ourselves. The very fact of the antiquity of an institution is, at all events, a respectable plea, and should not be wantonly rejected. It must, however, be admitted that this plea has not in our day the strength which it once had. Old institutions, of whatever kind, are now required to *prove* that they deserve to live, if that privilege is to be allowed them.

In the case before us, we have an extreme party of reformers, who without hesitation declare that the proper place for Classical instruction in the curriculum is no place at all—who would not only dethrone it from the position it has so long held, but thrust it ignominiously forth. This is the not unnatural reaction against the unwarrantable assumption on the other side, that the proper place of classics in the curriculum is the whole curriculum ; that they alone constitute “learning ;” and that the most honourable and lucrative positions in society ought to be allotted, as a matter of course, to those who hold *their* certificate. Exaggerated pretensions, however, on whichever side they are held, only injure the cause of those who maintain them, and in the present case are especially unsuitable. For, as between the rival claims of language and literature on the one side, and science on the other, there is surely much to be said for both so true and so reason-

able as to claim the respectful attention of all fair and competent judges. It must never be forgotten that out of those ages in which science, properly so called, was unknown, came forth the great teachers of mankind, the pioneers, nay more, the efficient agents, by words and deeds, in originating and carrying on the civilization of the human race. This important work was accomplished by men utterly unacquainted with geology, the steam-engine, the electric telegraph, spectrum analysis, or the dynamic theory of heat. Without these means and appliances, or even an atom of the spirit of which they are the fruit,—without any of the enthusiasm of modern physical philosophy,—statesmen and warriors, heroes, patriots, and artists, of whom all ages are proud, have so lived as to leave an imperishable name behind them. Whether the age of science will produce grander results, has yet to be proved. On the other hand, it is most reasonable that science too should, in our day especially, claim its proper place in education as a civilizing agent. It may point with pride to what it has done and is doing, and may without rebuke exclaim: “If you need memorials of my power and influence, look around you; the results are everywhere. Nay more, if, instead of mere details, dry facts, and practical applications, you have a taste for sublime speculations and theories, I can furnish you with views into the distant and the past almost unequalled for elevation, range, and depth, and fraught with the profoundest interest to the present and all future generations.” We may therefore, without slavish humility, bow reverentially before both these claimants on our homage, and denounce impartially the zealots and fanatics on either side,—the men who audaciously declare that scientific instruction is “worthless,” and equally those who stigmatize the classics as “useless,”—in the curriculum of modern education.

In dealing with the subject of my lecture, I propose in the first place, to consider generally the curriculum of modern education for the middle classes, and to discuss some of the plans proposed for its reformation; and secondly, to advocate the claims of classical instruction to continue to hold the leading place in it as a mental discipline.

The object we have in view is to discuss the curriculum of modern education, as

far as the *middle classes of society* are concerned—excluding, on the one hand, those whose instruction must, from circumstances, be limited to the barest elements of learning; and those, on the other hand, whose course is intended to terminate in a university career. The question then is—considering the age in which we live, with its immense accumulation, and wonderful applications, of knowledge; considering too that the longest life is too short for securing for the individual man any large portion of this, which constitutes the treasury of the race; and that the immature faculties of the child can grasp only a very limited portion of that which is ultimately attained by the man—whether we do wisely in giving up any considerable portion of the small space of time available for acquisition, to the attainment of a kind of knowledge which appears, in comparison with scientific and general information, to be only slightly demanded by the wants and the wishes of the age. If it is necessary, or even important and desirable, that *we should all attempt to know all things*, this question is at once settled by the exigencies of the case. Every moment of the time devoted to instruction must, on that assumption, be given up to the earnest and unremitting pursuit of the “things that lie about in daily life;” and everything which impedes or interferes with that pursuit must be regarded as impertinent. It is, however, perfectly clear that the attempt to force the individual man to keep up with the intellectual march of the human race, must end in utter disappointment; and, moreover, involves a fatal misconception of the object which all true education should have in view. It cannot be too frequently repeated, that development and training, and not the acquisition of knowledge, however valuable in itself, is the true and proper end of elementary education, nor too strongly insisted on, that he who grasps too much holds feebly, or, as the French pithily express it, *qui trop embrasse mal étreint*. The fact that there is a vast store of knowledge in the world is no more a reason why I should acquire it all, than the fact that there is an immense store of food is a reason why I should eat it all. We may mourn over the limitation of our powers, but as our fate in this respect is quite inevitable, it

is our duty, as rational creatures, to submit to it, and to be satisfied with doing, if not all that we fondly wish, yet all that we can, and, what is more important, as well as we can. I cannot but think that the protest of the high-minded and conscientious men who are in our day aiming at the reform of the school curriculum, would be much more influential with the public if they would keep closely to the true issue in discussing this question. It is most desirable, certainly, that there should be a thorough reform; but it is equally desirable that the reform should be established on a sound basis, and that both parties should co-operate in arriving at a wise decision on this point.

It is much to be regretted that so many of those who have handled the subject of the curriculum in the interests of philanthropy, should be disqualified from treating it judiciously by a want of practical acquaintance with education. Very much at their ease, they construct airy and fantastic theories, founded not on what is practicable, but what is desirable; recommend them earnestly, as if they were the genuine fruits of experience, and too frequently reproach the hard-working teachers, who, however much they may admire such theories, cannot by any amount of labour realize them, and therefore feel themselves aggrieved at having their actual educational product unfairly brought into comparison with the highly-coloured results promised by the theorist. These writers, men, if you will, of benevolent hearts, certainly of lively imaginations, evince far too little sympathy with the actual work of the practical teacher, with his arduous, long continued, little appreciated toils, his never-ending struggle against the natural volatility, ignorance, dullness, obstinacy, and sometimes depravity, of his pupils; and comprehend not the true vital organisation of that "pleasing, anxious (professional) being," which perhaps, after all, no earnest teacher ever resigns without some "longing, lingering look behind."

Two leading principles seem to characterize most of the theories which have been, in modern times, proposed for the reform of the old curriculum. The first is, that the curriculum ought to be considered as a counterpart or reflex of the world of knowledge to which it is introductory, and that therefore the *omne scibile* of the latter should be repre-

sented in the former. The other principle seems to be, that as men are often found "unpractised, unprepared, and still to seek," in regard to the circumstances in which they are actually placed in life, we should anticipate this difficulty by making children acquainted beforehand with "the leading kinds of activity which constitute human life"—in other words, with all varieties of practical business. In enforcing both these views, touching appeals *ad misericordiam* are made by their supporters, based, first, on the cruelty of withholding from the child that knowledge of science which has become the inheritance of the race, and which he so much desires to have; and again, on the criminal neglect of his teachers in not securing him, by ample knowledge of practical business, against the dangers into which, from ignorance and inexperience, he is not only likely, but certain to fall. The theory, then, stated in its bare simplicity, is, that the boy is to be provided by his education, first, with *all scientific knowledge*; and secondly, with *all practical knowledge*, as his proper equipment for the battle of life.

That I may not, however, be suspected of misrepresenting these theoretical views of the curriculum, I will now endeavour to exhibit them, as taken from the works in which they are to be found.

In the first number of the "Westminster Review," published in 1824, we find an article mainly devoted to the explanation and enforcement of Mr. Bentham's "Chrestomathia"* as a scheme of instruction which (to use the reviewer's words) should "comprehend the various branches of education which are spread over the whole field of knowledge, giving to each its due share of importance with a view to the greatest possible sum of practical benefit." It is curious to see the course of study proposed by Bentham, and which has been extended by the enthusiastic Mr. Simpson, in his work entitled "The Philosophy of Education."

The subjects proposed for the Chrestomathic

* "Chrestomathia: being a Collection of Papers explanatory of the Design of an Institution proposed to be set on foot, under the name of the Chrestomathic Day-Schools, or Chrestomathic School, for the Extension of the New System of Instruction to the Higher Branches of Learning, for the use of the Middling and Higher Ranks of Life." By Jeremy Bentham, Esq. London: 1816.

curriculum of study in the case of boys, and girls too, "between the ages of seven and fourteen," are as follows:—

Elementary Arts.—Reading, writing, arithmetic.

1st Stage.—Mineralogy, botany, zoology, geography, geometry (definitions only), history, chronology, drawing.

2nd Stage.—Same subjects, with mechanics, hydrostatics, hydraulics, pneumatics, acoustics, optics.

Chemistry, mineral, vegetable, animal.

Meteorology, magnetism, electricity, galvanism, ballistics.

Archæology, statistics.

English, Latin, Greek, French, and German grammars.

3rd Stage.—Subjects of previous stages, and mining, geology, land-surveying, architecture, husbandry, including the theory of vegetation and gardening.

Physical economics—*i. e.*, the application of mechanics and chemistry to domestic management, involving "maximization of bodily comfort in all its shapes, minimization of bodily discomfort in all its shapes," biography.

4th Stage.—Hygiastics (art of preserving and restoring health), comprising physiology, anatomy, pathology, nosology, dietetics, materia medica, prophylactics (art of warding off evils), surgery, therapeutics, zohygiastics (art of taking care of animals).

Phthisozoics (art of destroying noxious animals: vermin killing, ratcatching, &c.).

5th Stage.—Geometry (with demonstrations), algebra, mathematical geography, astronomy.

Technology, or arts and manufactures in general.

Bookkeeping, or the art of registration or recordation.

Commercial book-keeping.

Note-taking.

Such is the scheme of the Chrestomathia,

which designedly omits (as Mr. Bentham tells us) gymnastic exercises, fine arts, applications of mechanics and chemistry, belles lettres, and moral arts and sciences. These are omitted on various grounds which I have no time to specify, except to mention one, which might indeed have very suitably excluded five-sixths at least of those enumerated—"time of life too early."

Mr. Simpson, approving of the whole of the above curriculum, thought it still incomplete, and therefore introduced the department of Moral Science omitted by Bentham, as a

6th Stage.—History, government, commerce.

Political economy.

Philosophy of the human mind.

Risum teneatis, amici! Was anything more extraordinary ever proposed in the whole history of man? This imposing display of the triumphs of the entire human race is actually presented as a curriculum of study for children between *seven and fourteen years of age!*

Such is the scheme lauded by a writer who complains that "hitherto the education proper for civil and active life has been neglected, and nothing has been done to enable those who are to conduct the affairs of the world to carry them on in a manner worthy of the age and country in which they live, by communicating to them the knowledge and the spirit of their age and country." This is the panacea, then, proposed by the Chrestomathic school for the cure of the educational maladies of the day. Education, according to this view, is to consist in the administration of infinitesimal doses of knowledge: a little drop of this, a pinch of that, an atom of the third article, and so on; the names and technicalities of a great range of subjects, and mastery and power over none. Comment on such a scheme is unnecessary. It condemns itself, as a method of teaching superficiality and sciolism on system. Is there any connection between such a course and the "complete and generous education" (these are Milton's words) that "fits a man to perform justly, skilfully, and magnanimously all the offices, both private and public, of peace and war"? Are we not rather injuring than aiding true mental development, and perhaps moral too, by pretending to teach the sciences when all the while we are teaching little beyond their names? Is such a scheme as this to supersede the sound instruction and invigorating dis-

cipline of the old school? Is this the desideratum so eagerly looked for as a means of producing men capable of carrying on the affairs of the world in "a manner worthy of the age and country in which we live"? I quite agree with the most advanced of the reformers in question as to the need of reform; but I hope they will agree with me that this is not the direction in which it is to be promoted, and that if the new crusade is to be successful in its objects, Messrs. Bentham and Simpson must not be permitted to head the movement.

Another theoretical writer on modern education is Mr. Herbert Spencer, who, in his work entitled "Education, Intellectual, Moral, and Physical," has presented us with a scheme—evolved apparently out of the depths of his own consciousness; for he does not profess to have any practical experience as a teacher or schoolmaster—so ingenious, and pretty, and complete, that one can only sigh over the limited capacity of human nature, which will, it is to be feared, for ever prevent its being realised. While agreeing for the most part with Mr. Bentham, that a child can and ought to learn—at least, what he calls learning—an immense number of subjects, he insists with great earnestness upon the principle (which, if rightly interpreted, no one questions), that education should prepare the pupil for the duties of life; or, as he styles it, for "the right ruling of conduct in all directions, and under all circumstances." This, as he remarks,—and everyone will agree with him,—is the "general problem, which comprehends every special problem;" and he goes on further to tell us, that the solution of it involves our knowing "in what way to treat the body; in what way to treat the mind; in what way to manage our affairs; in what way to bring up a family; in what way to behave as a citizen; and in what way to utilise those sources of happiness which nature supplies; how to use our faculties to the greatest advantage of ourselves and others; how to live completely. And this being the great thing needful for us to learn, is by consequence the great thing which education has to teach."

This is an epitome of Mr. Spencer's views on the curriculum, and it appears to be impossible to satisfy the conditions of his theory by anything short of special preparation for all the contingencies of life. My limits will

not allow of a close investigation of arguments and illustrations, spread over nearly sixty pages of his book; but a practical schoolmaster has surely some right to inquire, whether he is serious in adducing, as evidences of defect in the school curriculum, numerous instances of persons injuring their eyesight by over-study, and their limbs by over-exercise; of others suffering "from heart-disease, consequent on a rheumatic fever that followed reckless exposure;" and again, of "the engineer who misapplies his formulæ for the strength of materials, and builds a bridge that breaks down;" of the shipbuilder who, "by adhering to the old model, is outsailed by one who builds on the mechanically-justified wave-line principle;" of the bleacher, the dyer, the sugar-refiner, the farmer, who fail more or less, because unacquainted with chemistry; and notably of the mining speculators, who ruin themselves from ignorance of geology; and the constructors of electro-magnetic engines, "who might have had better balances at their bankers," if they had understood "the general law of the correlation, and equivalence of forces." Are all these sad delinquencies, and many more, recounted with terrible accuracy by Mr. Spencer, fairly to be laid to lack of service and duty and sense in the schoolmaster? Ought the elementary schoolmaster—that is the real question—to have furnished all his pupils of from seven to fourteen years of age with the knowledge, and judgment, and common sense, and experience, which are the proper safeguards against the failures I have enumerated? I answer distinctly, that he is not responsible; and I might say this much more strongly, but that I respect Mr. Spencer's earnestness and true sincerity of purpose. But Mr. Spencer, who is no schoolmaster himself, having, it would appear, a most exalted opinion of the omnipotent and omniscient faculties of that functionary, demands still something more of him, and regarding it as "an astonishing fact, that not one word of instruction on the treatment of offspring is ever given to those who will by and by be parents," that is, given by the schoolmaster, lays that obligation also upon him. Here too, it appears to me, the practical schoolmaster has a right to ask, very specifically, what kind of information "on the treatment of offspring" Mr. Spencer would

himself propose to give, as a sort of model school lesson, to a child of twelve or fourteen years of age? The child is, to be sure, in a certain sense, "the father of the man"; but it is coming down rather sharply upon him to apply this literally, and make him leave his tops and balls so early in life, and set about this unseasonable preparation for the duties of paternity.

The general conclusion, then, from our review of Mr. Spencer's theory is, that its due satisfaction involves the assumption that every man is to be his own doctor, lawyer, architect, bailiff, tailor, and, I suppose,—clergyman; so that the Chrestomathic scheme, which required the child to learn the *omne scibile*, is supplemented, as not being comprehensive enough, by Mr. Spencer's, for learning also the *omne facibile*,* and both must, I fear, be condemned, not only as being utterly impracticable, (though that might be a sufficient objection,) but as being based on a total misconception of what elementary education ought to be.†

The fact is, that however captivating to the imagination the idea may be of communicating to our pupil those immense stores of knowledge, the possession of which distinguishes the present from all previous ages, it is one which, when brought to the test of experience, proves utterly illusory. A higher power than that of either the theoretical educationist, or the practical schoolmaster, has ordained that into the kingdom of knowledge, as into the kingdom of heaven, we must enter as little children. We must begin at the beginning, and learn the *prima elementa* each for himself, as all children before us have done, gaining little advantage as individuals from the achievements which science has effected for our race. We find, too, that if, from a desire to spare our pupil the labour of learning fact after fact in apparently endless succession, we frame compendious formulæ, rules, and general principles, founded on other men's mental experience, and endeavour to feed his mind with them, they prove, in the early stage of instruction, utterly indigestible, and minister no proper nourishment for him. Mr. Spencer, in another part of his book, justly remarks: "To give the net product of inquiry, without the inquiry that leads to it, is found to be both

inefficient and enervating. General truths, to be of due and permanent use, must be earned."

The same principle would seem to decide the question of special preparation. The experience of those who have gone before us cannot supersede our own; and no conceivable improvement, therefore, in the curriculum will ever provide for "the right ruling of conduct in all directions, under all circumstances;" or, in other words, furnish a child beforehand with the mental and moral powers which are to be developed in the actual life of the man. It is by living that we learn to live.

I have already suggested, that development and training, not the acquisition of knowledge, however valuable in itself, is the true and proper end of elementary education. In a general way it may be asserted that the former is the main tenet of the old or conservative, the latter of the new or reforming school. We shall have to dwell at some length on this point, that we may be prepared to recognise the respective claims of various subjects to be admitted into the curriculum. It is perfectly true that neither view of necessity excludes the other. Any subject, however suitable in itself for the discipline of the pupil, may be so taught as to involve no good training; and a subject presumptively unsuitable may, by the skill of the teacher, be made to yield the happiest fruits. Still the prominence given to these respective features in theory must materially affect the practice founded on them. I need not refer to the very etymology of the word "education" to support the more old-fashioned view of the case. All will allow that it means training or development; but I would dwell for a moment on the meaning of the cognate term "instruction," in support of the same argument, and also to show that a real and judicious teaching of science, not a random gathering together of scraps of "useful knowledge," does indeed involve a genuine discipline of the mind. The original meaning of *instruere* is to heap up, or pile up, or put together in a heap generally, and seems somewhat to countenance the Chrestomathic notion; but the secondary meaning, and that with which we are more concerned, is "to put together in order, to build or construct"; so that instruction is the orderly arrangement and disposition of knowledge, a branch of mental discipline which all must acknowledge

* This phrase is, I am aware, non-classical. It is, however, to be found in Ducange.

† See Appendix, Note A.

to be of great importance and value. But heaping bricks together, and building a house with them, are two very different things. The orderly arrangement of facts in the mind implies a knowledge of their relation to each other; and, if carried out to a certain extent, furnishes the ground-work for the establishment of those general laws which constitute what is properly called science. The knowledge, however, of these mutual relations is gained by quiet, earnest brooding over facts, viewing them in every kind of light, comparing them carefully together for the detection of resemblances and differences, classifying them, experimenting upon them, and so on. Allowing, then, to science, properly so called, all that can be claimed for it as a constituent of the curriculum—and of its immense value in education I shall have to speak presently—we must explode, definitely and finally, the notion that these valuable results can be elicited by frittering away the powers of the mind on a great variety of subjects. Nor must we be led away by the frequently meaningless clamour for “useful knowledge.” Knowledge which may be unquestionably useful to some persons may not be useful at all to others; therefore, although education is to be a preparation for after life, yet it is to be a general, not a professional, preparation, and cannot provide for minute and special contingencies. The object of education is to form the man, not the baker—the man, not the lawyer—the man, not the civil engineer.

What then, we may now inquire, should be the main features of a *training*, as distinguished from an *accumulating*, system of instruction? It should, I conceive, aim at quickening and strengthening the powers of observation and memory, and forming habits of careful and persevering attention; it should habituate the pupil to distinguish points of difference and recognise those of resemblance, to analyse and investigate, to arrange and classify. It should awaken and invigorate the understanding, mature the reason, chasten while it kindles the imagination, exercise the judgment and refine the taste. It should cultivate habits of order and precision, and of spontaneous, independent, and long continued application. It should, in short, be a species of mental gymnastics, fitted to draw forth, exercise, invigo-

rate, and mature all the faculties, so as to exhibit them in that harmonious combination which is at once the index and the result of manly growth. In order to gain the ends I have specified, or indeed any considerable number of them, it is essential that the studies embraced in the training course should be few. We cannot hope to have, in the early stage of life, both *quantity* and *quality*. In giving a preference to the latter, we do but consult the exigencies of the case. At the same time, it may be hoped that, because the aim is to enrich and prepare the soil, the ultimate harvest will be proportionately bountiful.*

I have said that the subjects to be studied in the training course should be few. But I proceed further, and maintain that for the purpose of real discipline it is advisable—nay, even necessary—to concentrate the energies for a long period together on some one general subject, and make that for a time the leading feature, the central study of the course—keeping others in subordination to it. By giving this degree of prominence to some particular branch of instruction, we may hope to have it studied to such an extent, so closely, so accurately, so soundly, so completely, that it may become a real possession to the pupil—a source of vital power, which the mind “will not willingly let die.” The concentration of mind and range of research necessary for this purpose obviously involve many of the advantages I have recently enumerated. In this way, too, the pupil will become fully conscious of the difference between *knowing a thing* and *knowing something about it*, and will be forcibly impressed with the superiority of the former kind of knowledge. This conviction is of no small importance; for it gives him a clear, experimental appreciation of the agency—the measure and kind of intellectual effort—by which the complete and accurate knowledge was gained, and thus can hardly fail to exercise a valuable influence upon his character. He who has learned by experience the difficulty of obtaining a thorough mastery of a subject, has made no trifling advance in

* The opinion of Locke confirms this view. His words are:—“The business of education is not, as I think, to perfect the learner in any of the sciences, but to give his mind that freedom, and disposition, and those habits which may enable him to attain every part of knowledge himself.” (*Some Thoughts concerning Education.*)

the knowledge of himself. He has tested his power of struggling with difficulties, and acquired in the contest that command over his faculties, and that habit of sustained and vigorous application, which will ensure success in any undertaking. He who has only begun a study, or advanced but little in it, is a stranger to that consciousness of strength and range of mental vision which are involved in the cultivation of it to a high point. The knowledge, thus thoroughly acquired and possessed as a familiar instrument by the pupil, becomes not only a powerful auxiliary to his further attainments, but a high standard to which he may continually refer them.*

One of the chief reasons why the study of one thing, one subject, or one book, is so valuable a discipline, is that the matter thus submitted to the mind's action forms a whole, and by degrees reacts on the mind itself, and creates within it the idea of unity and harmony. Suppose, for instance, that we read a book with the view of thoroughly studying and mastering it. We find, as a consequence of the unity of thought and expression pervading it, that one part explains another, that what is hinted at in one page is amplified in the next, that the matter of the first few sentences is the nucleus (the oak in the acorn, as it were) of the entire work. Thus the beginning of the book throws light upon the end, which the end in its turn reflects upon the beginning. He who studies in this way must carefully weigh each word, and estimate its value in the sentence of which it is a part, and its bearing on those which have

preceded it; he must also keep it in recollection, that he may observe its connection with what follows. When he encounters difficulties which he cannot at the moment solve, he must retain them in mind until the clue to their solution is gained. He must often retrace his steps with the experience he has acquired in advancing, and then advance again with the added knowledge gained in his retrogression. It is only by thus wrestling—agonising, as it were—with a subject, that we eventually subdue it, and make it ours, and a part of us. By such or analogous processes, constantly and patiently pursued, we rise at last to the highest generalisations; so that a knowledge of the phenomena of the material world is digested into Science, a knowledge of the facts and matter of language is elaborated into Learning, and a knowledge and intimate appreciation of the facts of human life ripens into Wisdom. Everyone will bear me out in the remark, that it is from those few books that we read most carefully—that we “chew and digest,” to use Bacon’s words—that we peruse again and again with still increasing interest—that we take to our bosom as friends and counsellors; it is from these that we are conscious of deriving real nourishment for the mind. Nor is it perhaps rash to assert that the general tendency, in our day, to dissipate the attention on all sorts of books, on all sorts of subjects, which just flash before the mind, excite it for a moment, leave a vague impression, and are gone, is stamping a character upon the age which will render nugatory the well-meant efforts which have of late been made for the enlightenment of the popular mind, and the extension of useful knowledge. It is, I say, characteristic of the age, that we emasculate and enfeeble our powers by the vain attempt to *know everything which everybody else knows*; and learn, in conformity to the fashion of the times, even to feel it as a reproach that we have not “dipped into,” or “skimmed over,” or “glanced at” (very significant phrases) all the articles in all the newspapers, magazines, and reviews of the day. We indolently allow ourselves to be carried on, in spite of our silent protest, against our real convictions, with the shallow tide which is sweeping over the land; and, inasmuch as we do so, are neutralising the real interests of the cause we profess to be

* The above argument is powerfully confirmed in the following passage from an “Introductory Lecture” by Professor De Morgan, delivered at University College, October 17, 1837:—

“When the student has occupied his time in learning a moderate portion of many different things, what has he acquired—extensive knowledge or useful habits? Even if he can be said to have varied learning, it will not long be true of him, for nothing flies so quickly as half-digested knowledge; and when this is gone, there remains but a slender portion of useful power. A small quantity of learning quickly evaporates from a mind which never held any learning, except in small quantities; and the intellectual philosopher can perhaps explain the following phenomenon:—that men who have given deep attention to one or more liberal studies, can learn to the end of their lives, and are able to retain and apply very small quantities of other kinds of knowledge; while those who have never learnt much of any one thing seldom acquire new knowledge after they attain to years of maturity, and frequently lose the greater part of that which they once possessed.” (p. 12.)

advocating, and preventing the formation of valuable and useful judgments on any subject whatever. If you consider with me that this general dissipation is an evil, you will also sympathise with the desire to prevent the organization and establishment of the principle in the curriculum of elementary education. A thousand times better, in my opinion, to have the old hum-drum monotony, the ceaseless drill, which ended *only* in preparing the faculties to work to some purpose, when they did work, on the problems of life, than the counterfeit knowledge which can give an opinion on every subject because substantially uninformed on any.

It is not, perhaps, too much to assert, that concentration of mind on a few subjects is, and ever has been, the only passport to excellence. All the great literary and scientific men of all ages, whose opinions we value, whose judgments are received as the dictates of wisdom and authority, have acted on the conviction, that the powers of the mind are strengthened by concentration, and weakened by dissipation.*

The practical inference from the foregoing remarks is, that in order to train the mind usefully, concentration, and not accumulation, must be our guiding principle; in other words, we must direct the most strenuous efforts of

our pupils to the complete and full comprehension of some one subject as an instrument of intellectual discipline.

The next consideration, then, is, what the subject submitted to this accurate and complete study ought to be. And here we come again nearly to the point at which we set out, and must now for ourselves renew the friendly strife between the "trivials" and the "quadrivials" once more. I say "friendly," because the claims of both are so reasonable, that it really ought not to be very difficult to adjust them, and no angry feeling therefore ought to accompany the discussion. We have left the theorists behind, and are now to settle such questions as practical and experienced men, with reference to their real merits, judiciously, and with some degree of authority.

On the general subject of the curriculum, I will quote some remarks which I have lately met with in a pamphlet by an able American writer, apparently acquainted by experience with his subject.* He is strongly opposed to what we usually call the Classical System, but candidly admits that its defenders have hitherto had greatly the advantage of their opponents in the line of argument they have pursued. "Disagree with them," he says, "as you may as to what studies go to make up a liberal education, you must go to them for a true definition of that training of mind in which a liberal education consists." As he is one of the ablest advocates of the claims of science, we may listen to what he says on its behalf as a part of school education. He assumes, then, as axioms these following propositions:—

"1. That in the Science and Art of education we must study and follow nature,—that we shall only be successful as far as we do.

"2. That there is a certain natural order in the development of the human faculties; and that a true system of education will follow, not run counter to, that order.

"3. That we may divide the faculties of the mind, for the purposes of education, into observing and reflective; and that in the order of development the observing faculties come first.

* See some very interesting illustrations in D'Israeli's "Curiosities of Literature," in the essay entitled, "The Man of One Book." To these may be added, as an instructive, though somewhat extravagant, specimen of the *non-multa-sed-multum* principle advocated in the text, the following, taken from the "Foreign Quarterly Review" for 1841:—

"Porpora, an Italian teacher of music, having conceived an affection for one of his pupils, asked him if he had courage to pursue indefatigably a course which he would point out, however tiresome it might appear. Upon receiving an answer in the affirmative, he noted upon a page of ruled paper, the diatonic and chromatic scales, ascending and descending with leaps of a third, fourth, &c., to acquire the intervals promptly, with shakes, turns, appoggiature, and various passages of vocalisation. This leaf employed master and pupil for a year; the following year was bestowed upon it; the third year there was no talk of changing it: the pupil began to murmur, but was reminded of his promise. A fourth year elapsed, then a fifth, and every day came the eternal leaf. At the sixth it was not done with, but lessons of articulation, pronunciation, and declamation were added to the practice. At the end of this year, however, the scholar, who still imagined that he was but at the elements, was much surprised when his master exclaimed, 'Go, my son; thou hast nothing more to learn; thou art the first singer of Italy, and of the world.' He said true. This singer was Caffarelli."

* "Classical and Scientific Studies, and the Great Schools of England." By W. P. Atkinson, Cambridge (U.S.), 1865.

"4. That individual minds come into the world with individual characteristics; often, in the case of superior minds, strongly marked, and qualifying them for the more successful pursuit of some one career, than of any other.

"5. That the study of the material world may be said to be the divinely appointed instrument for the cultivation and development of the observing faculties; while the study of the immaterial mind, with all that belongs to it, including the study of language as the instrument of thought, is the chief agent in the development of the reflective faculties."

Speaking in the interests of that reform in the curriculum which is very decidedly needed, I would frankly accept these propositions, though the terms of some of them, especially those of the fourth and fifth, might give a caviller a favourable opportunity. Of one point essentially involved in them, I have no doubt; and that is, that any rational curriculum of elementary study must be based on the fact that the observing, are called into action before the reflecting, faculties; in other words, that the food must be swallowed before it is digested; though I believe it to be an educational fallacy to maintain that therefore no food should be swallowed that cannot be instantly digested. The general consideration would, however, seem to justify us in carrying forward, before anything else is attempted, the instruction which the child has already commenced for himself, in the study of the phenomena of the external world, and in that of the mother tongue. Professor Tyndall has shown, in his interesting lecture on the study of Physics, that even the new-born babe is an experimental philosopher, and improvises by instinct a suction-pump to supply himself with his natural food, and day after day, by experiment and observation, makes himself acquainted with the ordinary properties of matter, acquires the idea of distance, sound, and gravitation, and so on, and, by burning his fingers and scalding his tongue, learns also the conditions of his physical well being. In this hand-to-mouth way the pupil in the great school of nature begins his lessons, and surely it is most natural that he should be encouraged to continue this self-education, and, under judicious guidance, he may very properly be made acquainted with the things "which lie about in daily life," and also be

trained to the study of that proper connection between things and words which is the true basis of a good knowledge of his own language. Such a course of instruction, such "lessons on objects," will no doubt amuse and interest the young natural philosopher, and may be the means of eliciting, even quite early in life, those predilections of which Mr. Atkinson speaks as the special characteristics of the individual, and which, in certain cases, may furnish suggestions to be afterwards employed in conducting his education.

Having arrived at this point in the discussion of my subject, I must make a confession;—which, however, is not humiliating, because, though I have to speak of personal failure, I am supported by the consciousness of honest intentions. I have always been fond of science in every shape, and well remember the delight with which, when a boy, I adopted as the pocket companions of my leisure hours the little volumes of Joyce's "Scientific Dialogues," and Miss Edgeworth's charming "Harry and Lucy." I say this to show that in the experiments which I made in teaching something that might be called science to young children, I was working *con amore*, and with a real desire to succeed. But I found my young natural philosophers somewhat difficult to manage. As long as everything was new, and striking, and amusing, they were attentive enough; but as soon as anything like training was attempted, as soon as I required perfect accuracy in observing, and careful classification and retention of results, my popularity waned astonishingly. They were, for the most part, satisfied with the attainments which they had made in the knowledge of the external world within the first three or four years of their lives, and did not discover that "craving after knowledge" which, I am told by Mr. Spencer and others, is always exhibited by children until it is for ever extinguished by the spectral display of the Latin grammar, which, like the famous Medusa's head, turns every one that looks at it into stone. According to my own experience, the young natural philosophers generally preferred choosing their own subject of instruction, and their own arena for the exercise; and that subject was what is usually called play, and the arena the playground. It is true enough that there is a great deal to

be learned of the properties of matter,—resistance, elasticity, action and reaction, the composition of forces, &c.,—in playing at bat, trap, and ball*; but I doubt very much whether there is any natural craving after such knowledge as the final cause of the game.

In general, I must say from experience that it is as possible to make even abstract subjects, such as arithmetic and grammar, quite as interesting to young children as those parts of science which really call for mental effort, and involve minute accuracy and care. Facts and phenomena certainly do interest the young; but science, as such, the knowledge of the relations between them, does not. Practical teachers are well aware of this fact, which theoretical writers too often forget, or, most probably, do not know.

Because children attending a lecture on natural science open their eyes very wide, and look intensely interested when they hear a loud bang, or see some of those striking experiments performed—often in a sort of *à la* Stodare fashion—which form the stock-in-trade of the lecturer on, say oxygen and hydrogen gases, it is too hastily concluded that that would be the normal condition of their attention to the science of chemistry in general. Look, however, at the same children when the lecturer takes his chalk in hand, and endeavours, by a diagram of very simple character, to make them understand the causes of the phenomena. The lack-lustre eyes and the yawning mouth very soon tell us that what we just witnessed was simple excitement, a matter of the senses, nerves, and muscles mainly, and being connected with amusement, and therefore involving no mental exertion, caught the attention for an instant, but was not in itself an element of mental improvement. The moment the *mind* was called on, it obeyed the summons with just as much alacrity as it usually displays when invited to dissect a diagram of Euclid. The assertion, that, as a general rule (and independently of the all-important question of what sort of a man the teacher is), children love science and hate language, is another fallacy of the same kind as those we have been already so liberally dealing

with this evening. Neither children nor men naturally like the difficulties, the drudgery of any subject whatever. No practical teacher will pretend that they do. Yet these difficulties must be overcome, if the subject is to be really learned. But we may test my position by reference to music. I might, of course, indulge in any amount of rhapsody about music,—its exquisite charms,—its universal popularity, and so on,—but what verdict would a jury of little girls give on what is technically termed “practice,” and on the “grammar of music”? That “practice,” however, and that “grammar,” are the very foundation of the excellent performance which so delights our ears and our taste, and without the one we absolutely cannot have the other. I wonder, indeed, whether, if we could collect all the tears which have been shed by children respectively learning the Latin grammar and the piano in two separate receptacles, the music lachrymatory would not contain the larger quantity. And yet music is so delightful, and the Latin grammar so horribly disagreeable! To return, however, to my main argument.

The early stage of life is doubtless the most suitable time for improving and exercising the natural faculty of observation, and much may be done at this time in preparing the mind for the great benefit which the proper study of science is to confer upon it. But I must protest against dignifying the desultory scraps of information thus acquired—the results of the process of taking up one subject after another to keep the child in good humour—the cakes and honey supplied to sweeten the youthful lips—by the name of science; nor do I feel inclined to think that we have at last reached the long-sought desideratum in teaching, when a band of children, in all the frolic and fun belonging to their nature, gather handfuls of flowers, and run up to the teacher to ask the names of them, and—to forget them as soon as named.* However, if this is science, I would certainly teach it in the early stage of instruction. Children generally like this desultory style of skipping

* This is very pleasantly exemplified in Dr. Paris's ingenious little book, “Philosophy in Sport made Science in Earnest.”

* Mr. Henslow's interesting experiments in teaching village children accomplished much more than this; and, indeed, proves the applicability of the subject to the wants of the early stage of education. (See Museum, vol. iii. p. 4, and Educational Times, Nov., 1865.)

from subject to subject. It stimulates their senses, brings them into contact with nature herself in the open air, interests them in her glorious variety and boundless fullness, and thus supplies happy emotions; it calls for little exertion on their part, does not "bother their brains," and is rarely the occasion of tears or punishments.* If this is science, I would teach it as a part of the training of the observing faculties, a discipline which has been too much neglected by the ordinary systems;† and in the hands of a judicious teacher, out of these random efforts real instruction may grow; and the bricks thrown together in a heap, and so far valueless, may, under the genial influence of the educational Amphion, rise up, like the walls of the fabulous Thebes, into the form of a harmonious fabric.

We must not, however, forget that our young philosopher, who has learnt so much by himself in the first two or three years of his life by exercising his faculty of observation, also develops, in the same space of time, eminent powers as a linguist; and if we follow nature in aiding and encouraging his researches in the one field, it appears quite right to do the same in the other. Indeed, the two faculties are exactly adapted to assist each other; for notwithstanding all that is said about the learning of things as opposed to the learning of words, there is a sense in which they are one and the same, and it is very curious to see how Mr. Spencer, for instance, in describing what he evidently considers model lessons in elementary science, speaks as if a great part of the object of these lessons was to teach the accurate meaning of words. "The mother," he says, "must familiarize her little boy with the *names* of the simpler attributes, hardness, softness, colour; in

doing which she finds him eagerly help by bringing this to show that it is red, and the other to make her feel that it is hard, as fast as *she gives him words* for these properties." There is much more to the same purport, which I have no time to quote. But is it not singular that so ingenious a man does not see that this process, which he lauds so highly, is only a sensible way of teaching, not *science* merely, but the *mother-tongue*? The teacher is trying to get the pupil to attach clear ideas to the use of words; and, while professing to despise the teaching of words, is in reality doing little else; for words are, in a well understood sense, the depositories of the knowledge, spirit, and wisdom of a nation.* I am perfectly aware that the pupil, while thus engaged, is learning much more than mere words; but I maintain that he is also learning words while he is learning things, and that the antithesis so much insisted on is more specious than real. However this may be, I quite approve of these lessons on things, or lessons on words, whichever they may be called, as a part of the elementary stage of instruction, which may be practically considered as terminating at *twelve years of age*.

But this stage is also the most suitable for learning the use of a foreign tongue, and, therefore, to the elementary subjects which must, as a matter of course, come into the curriculum—reading, writing, arithmetic, taught at first by palpable objects, or counters; geography, commencing with the topography of the house and parish in which the pupil lives; history, made picturesque by oral teaching in such a way as to arrest the attention and stimulate the imagination; lessons on objects as introductory to the rudiments of science; word-lessons,† gradually extended from the names of material objects to those of moral and intellectual notions—should be added the study of French. The lessons in this language should be eminently practical; accurate pronunciation should be insisted on, and as

* It is well, too, to encourage children to make collections of leaves, hutterflies, beetles, &c. Everything should be done to make the connexion between teacher and pupils pleasant for both; and therefore sympathy should be warmly evinced in such pursuits as these. Professor Blackie has well expressed these views in the following passage from a lecture delivered in Latin, at the Marischal College, Aberdeen:—"Exeant in campos pueri, fluminum cursus vestigent, in montes ascendunt; saxa, lapides, arbores, herbas, flores potent, et notando amare discant; oculis non vagis, fluitantibus et somniculosis, sed apertis, claris, firmis; auribus non obtusis incertisque sed erectis atque accuratis rerum varietatem percipiant." (*De Latinarum literarum præstantia atque utilitate*, p. 13.)

† See Appendix, note B.

* He who completely *knows* a word knows all that that word is or ever was intended to convey, its etymological origin, its first meaning as fixed in the language, its subsequent history, its varying fortunes, and the idea it suggests to various classes of persons.

† Hints for such lessons might be gained from Wood's Account of the Edinburgh Sessional School; but better ones can easily be framed.

rapidly as possible the actual practice secured. This is the main point. At no period of life will so good an opportunity be found for doing this in an easy, natural way. The organs are in a flexible condition, the ear is apt at catching, the mouth at imitating, sounds; and without even talking of grammar (should such talk seem very alarming) a true initiation into the language may be gained. All that has now been suggested appears to be quite consistent with the principle above recommended, of continuing the exercise of the faculties of observation and imitation already commenced by nature.

Such rudimentary lessons in science as have been proposed above, do not appear to involve much strict mental discipline; nor do I believe, for reasons which will presently be suggested, that true science can advantageously be studied by very young pupils.* There is, however, one subject, which might, perhaps, be taken as the disciplinary study of the elementary stage, and with the greatest advantage. That subject is Arithmetic, which, if judiciously taught, involves a genuine mental discipline of the most valuable kind; and though really abstract in its nature, is capable of exciting the liveliest interest, while it forms in the pupil habits of mental attention, argumentative sequence, absolute accuracy, and satisfaction in truth as a result, that do not seem to spring equally from the study of any other subject suitable to this elementary stage of instruction.

At twelve years of age the pupil may be considered as entering on the second stage of

the Curriculum; and henceforth the development of the reflective faculties, and the acquisition of habits of industry and hard work, are the main objects to be kept in view. This is to be especially the stage of discipline; disciplined by means of Science (including Mathematics) and Language. The question now is, which shall take the lead.

Science may, for our present purpose, be defined to be *the knowledge of the laws of nature, as gained by reflection on facts which have been previously arranged in an orderly and methodical manner in the mind, in accordance with their natural relation to each other.* Every one must see that such a subject as this affords abundant scope for a life-long, and not merely a school, education. Considering, too, that this knowledge is not only deeply interesting in itself, but, being gained for the very purpose of diffusion, adds greatly to the sum of human happiness and prosperity, the motives to its pursuit are indeed transcendantly powerful, so that it must be a matter of great concern to all to secure for those who are to pursue it, even in a subordinate degree, a worthy training.

If science, then, is to constitute a real discipline for the mind, much, nay everything, will depend on the manner in which it is studied. In the first place, it is to be remembered that (to use the oft-quoted phrase) the pupil is about to study things, not words; and therefore treatises on science are not to be in the first instance placed before him. He must commence with the accurate examination (for which he has been partially prepared by the first stage of instruction) of the objects and phenomena themselves, not of descriptions of them prepared by others. By this means not only will his attention be excited, the power of observation, previously awakened, much strengthened, and the senses exercised and disciplined, but the very important habit of doing homage to the authority of facts rather than to the authority of men, be initiated. These different objects and phenomena may be placed and viewed together, and thus the mental faculties of comparison and discrimination usefully practised. They may, in the next place, be methodically arranged and classified, and thus the mind may become accustomed to an orderly arrangement of its knowledge. Then the accidental may be distinguished from

* It is only fair to place in view here the opinions on this point of Dr. Carpenter and Mr. Faraday, to whose judgment on any subject great deference is due; only adding, that I should attach more value to their opinions on teaching men, to which they are accustomed, than on teaching children, to which, as far as I know, they are not accustomed. In this matter as in others referred to before (see p. 13), going through with a thing is very different from merely beginning it, or touching it at special selected points. Have these gentlemen taught children hour after hour, year after year?

"At ten years old a boy [and therefore the average of boys] is quite capable of understanding a very large proportion of what is set down for matriculation at the London University under the head of Natural Philosophy." (*Dr. Carpenter's Evidence before Commission on Public Schools, vol. iv. p. 364.*)

"I would teach a little boy of eleven years of age [*i.e.* the average boys of eleven?] of ordinary intelligence, all these things that come before classics in this programme of the London University, *i.e.* mechanics, hydrostatics, hydraulics, optics," &c. (*Mr. Faraday's Evidence, vol. iv. p. 373.*)

the essential, the common from the special, and so the habit of generalization may be acquired ; and lastly, advancing from effects to causes, or conversely from principles to their necessary conclusions, the pupil becomes acquainted with induction and deduction—processes of the highest value and importance. Every one will allow that such a course as this, faithfully carried out, must prove to be a very valuable training. It would not, indeed, discipline the mind so closely as pure mathematics, yet its range is wider, and it is more closely connected with human interests and feelings. It is no small advantage, too, that it affords, both in its pursuit and its results,—both in the chase and the capture,—a very large amount of legitimate and generous mental pleasure, and of a kind which the pupil will probably be desirous of renewing for himself after he has left school. After all, however, it will be observed that, while the study of the physical sciences tends to give power over the material forces of the universe, it leaves untouched the greater forces of the human heart ; it makes a botanist, a geologist, an electrician, an architect, an engineer, but it does not make a man. The hopes, the fears, the hatreds and the loves, the emotions which stir us to heroic action, the reverence which bows in the presence of the inexpressibly good and great ; the sensitive moral taste which shrinks from vice and approves virtue ; the sensitive mental taste, which appreciates the sublime and beautiful in art, and sheds delicious tears over the immortal works of genius—all this wonderful world of sensation and emotion lies outside that world which is especially cultivated by the physical sciences. This is no argument, of course, against their forming a proper, nay an essential, part of the curriculum, but it is an argument against their taking the first place. They are intimately connected, of course, with our daily wants and conveniences. The study of them cultivates in the best way the faculties of observation, and leads naturally to the formation in the mind of the idea of natural law, and so ultimately to investigations and suggestions of a very high order, in the pursuit of which it is sought to define the shadowy boundary between mind and matter, or to reveal to present time the long buried secrets of the past. But in order to attain at last these eminent heights of science, the preliminary training must be

rigorous and exact. It must embrace the difficult as well as the pleasing and amusing—that which requires close and long-continued attention as well as that which only ministers to a transient curiosity. It must be based on the “firm ground of experiment,” and be independent of mere book study, which, it has been well observed, is, in relation to science, *only as* valuable, in the absence of the facts, as a commentary on the *Iliad* would be to him who had never read the poem.

We may assent then, on the whole, without hesitation, to the wise and careful judgment passed on the study of physical science as a part of the Curriculum by the Public School Commissioners in their report. “It quickens,” they say, “and cultivates directly, the faculty of observation, which in very many persons lies almost dormant through life, the power of accurate and rapid generalisation, and the mental habit of method and arrangement ; it accustoms young persons to trace the sequence of cause and effect ; it familiarizes them with a kind of reasoning which interests them, and which they can promptly comprehend ; and it is perhaps the best corrective for that indolence which is the vice of half-awakened minds, and which shrinks from any exertion that is not, like an effort of memory, merely mechanical.” In spite, then, of Dr. Moberly’s denunciation of such studies as “worthless,” and as “giving no power” in education,* I maintain that it is utterly impossible to exclude a subject with pretensions like these from our curriculum. They must and will occupy a considerable space in it—they deserve to do so. For reasons, however, already stated, I would not give them the post of the highest distinction, which ought to be reserved for the studies which exercise, not special faculties, but the whole man ; not the man as a professional and with a utilitarian end in view, but as a citizen of the world, as one who is to meet his fellow men and to influence their decisions upon the difficult and complicated problems of society.†

* “In a school like this (Winchester), I consider instruction in physical science, in the way in which we can give it, is worthless. . . . A scientific fact . . . is a fact which produces nothing in a boy’s mind. . . . It leads to nothing. It does not germinate ; it is a perfectly unfruitful fact. . . . These things give no power whatever.” (*Evidence before Commission on Public Schools*, vol. iii. p. 344.)

† See Dr. Johnson’s opinion, Appendix C.

Some think that pure mathematics should occupy this central post of honour. A moment's consideration, however, will show that the study of algebra, geometry, the calculus, &c., not only does not embrace those topics of common interest which are essential for our purpose; but has a special and limited office to perform—I mean, of course, independently of their practical applications. Lord Bacon has judiciously summed up their special functions. “They do,” he says, “remedy and cure many defects in the wit and faculties intellectual; for if the wit be too dull, they sharpen it; if too wandering, they fix it; if too inherent in the sense, they abstract it. So that, as tennis is a game of no use of itself, but of great use in respect it maketh a quick eye, and a body ready to put itself into all postures; so with mathematics, that use which is collateral and intervenient is no less worthy than that which is principal and intended.” These words aptly characterise the advantages of the study of mathematics, and point out their proper office in education. They cannot, from their very nature, exercise a formative power over the whole mind; but they are very profitably employed in correcting certain defects, and in teaching, as scarcely anything else can teach, habits of accuracy. They call into play but few of the faculties; but these they exercise rigorously, and therefore usefully. It has been objected to them, that when pursued to any considerable extent, without the counterpoise of more general studies, they become particularly exclusive and mechanical in their influence; but this perhaps can hardly be considered as an essential characteristic. On the whole, however, it can scarcely be maintained that mathematics will serve as the basis we require for our educational operations, though no education can be considered as complete which excludes them.

Having then shown that, notwithstanding the great value both of physics and of mathematics in education, they are too special in their application to serve as the central subject in our curriculum, we turn once more to language, and especially to the Latin language which I should propose as the exercising ground best adapted for the intellectual drilling of our young soldier. Greek, in the case of those whose school education is to terminate at sixteen years of age, must, I

think, be displaced in favour of the practical claims of German. This concession, and this only, would I recommend making to public opinion. And it is the less necessary to contest this point, as nearly all the disciplinary advantages which so eminently characterise the study of the classical languages may be gained from the study of Latin alone. It may then, I conceive, be fairly maintained that the place which classical instruction holds in the curriculum of English education is not due to prejudice, as some believe; nor to ignorance of what is going on in society around us, as others pretend; but to a well-judged estimate of its importance and value as a discipline for the youthful mind, and as an element of the highest rank among the civilising influences of the world.

This study may be considered under two aspects, the language itself and its literature.

My first proposition is that the study of the Latin language itself does eminently discipline the faculties, and secure, to a greater degree than that of the other subjects we have discussed, the formation and growth of those mental qualities which are the best preparatives for the business of life—whether that business is to consist in making fresh mental acquisitions, or in directing the powers, thus strengthened and matured, to professional or other pursuits.

Written language consists of sentences, and sentences of words. In commencing the study of a language, we may consider these words as things, which we have to investigate and analyse. They possess many qualities in common with natural objects, and may be therefore treated in a somewhat similar way. They have material qualities; they can be seen—they can be named (their sound is their name)—they can be compared together—their resemblances and differences discriminated, and arrangements or classifications of them made in accordance with observed similarity or difference in form. The memory, too, is practically and systematically exercised. The paradigms of inflexions must be accurately learnt by heart, and so familiarly known that the constant comparison between them as standards, and the varying forms which arise for interpretation, may be spontaneous and easy. And these acts of comparison are themselves of great value, and tend to cultivate accuracy of judgment: the

very blunders made are instructive: the half-perception induced by indolence must be corrected by increased labour. The attempt at evasion ends in a more complete reception; hence a moral as well as a mental lesson. Thus, acts of attention, observation, memory, and judgment are called forth; and these acts, by being performed numberless times, grow into habits. Again, these words can be analysed, separated into their component parts, and these parts severally examined, and their functions ascertained. Conversely, we may employ the synthetic process. We may fashion these elements in conformity with some given model, and thus adapt them to some given end. By closer investigation and comparison, affinities before unperceived are traced and appreciated, the transformation of letters detected, and the foundation laid for the science of Philology. It should be observed, that all these operations or experiments (for so they may be called) are performed on facts—on objects (a word is as much an object as a flower) directly exposed to observation; that they are at the same time simple in their nature, and though requiring minute attention, and so forming the habit of accuracy, are evidently within the competency of a child. It is no small advantage that the means of training the mind to such habits are always within reach, and available to an unlimited extent; and not, as is often the case with respect to physical objects, adapted to elicit somewhat similar exertions, obtained with difficulty, and therefore, perhaps, only heard of, and not seen.

But the attention of the pupil, at times necessarily occupied with the accidents or inflexions—the characteristic point of difference between his own and the Latin language—is at others directed especially to what we may call the *being* of each word, the idea which it is intended to convey or suggest. And now these words, lately treated as simply material, inanimate, and dead—anatomical “subjects”—are to be considered as invested with a kind of physiological interest, and as exhibiting phenomena of life whose nature it becomes important to study. Our pupil’s interest in them, viewed under this aspect, cannot but be much augmented. Words are now no longer things merely, but significant symbols of ideas. These little organisms, in one sense mere torpid aggregations of matter, are in another,

when placed in juxtaposition with words of our language, or when viewed in connection with cognates of their own, capable of affording vivid illustrations of the methods and artifices by which languages are formed. Hence arise exercises in *derivation*, or tracing of words up to their roots, and in *analysis*, or breaking up the compounds into their several components. These exercises in *derivation* cultivate moreover, when properly carried out, the habit of deducing the secondary and figurative senses of words from the primary and literal. Such an exercise leads the pupil beyond the boundaries of mere language. In pursuing it, he learns to study the mode in which the early stages of society formed their conceptions, and to notice how, as civilization advanced, the language too bore evidence of the change. Thus the word *gubernare* primarily means to pilot a vessel; secondarily, to direct the vessel of the state, to *govern*.*

But words, in themselves vital organisms, though frequently the life is rather latent than visible, are also to be considered in their combination in sentences. Their vitality now becomes intensified. The original author, speaking to men of his own nation, and aptly employing the resources of his craft, had by a kind of intellectual magnetism converted the neutral and indifferent into the active and significant, and constrained all to cooperate in effecting his great purpose of speaking out to other minds. And there before the eyes of our pupil is the result. But it does not speak out to him. That sentence, beginning with a capital and ending with a full stop, is a body with a soul in it, with which he has to communicate. But how to do this? His eye passes over it. It looks unattractive, dark, and cold. Soon, however, something is seen in the words or their inflexions, which he recognises, by a kind of momentary flash, as significant. The soul within begins to speak to him; and he catches some faint conception

* This sort of investigation often opens a very interesting field of inquiry. Thus the word *virtus*, in different stages of the Roman history, meant successively, active physical courage or manhood, and active moral courage, or virtue; while later, in Rome’s comparatively degenerate days, *virtù* signified a taste for the fine arts! a pregnant commentary on the character of the people. That people, however, it may be remarked, has already begun to *restore* the original meaning of the word.

of what it would reveal. As he still gives heed, other points show symptoms of life, and the lately brute and torpid mass becomes vocal and articulate. One after another the words kindle into expression; clause after clause is disentangled from its connection with the main body of the sentence, and appreciated both separately and in combination, until at length a thrill of intelligence pervades the whole, and the passage, before dark, inanimate, and unmeaning, becomes instinct with light and life.

By these and similar processes, which it is needless to specify, the pupil learns to apprehend his author's meaning, though perhaps at first only obscurely. The next stage in his training is to find words and phrases in his native tongue suited to express it. To do this adequately, he must not only ascertain the meaning of each term, but conceive fully and correctly all the propositions that constitute a complete sentence, in their natural connection and interdependence; he must observe the bearing of the previous sentences on the one under consideration, and the ultimate point to which all are tending. Now, in order to convey perfectly to others the meaning, which he has himself laboriously acquired, he must not only have made an exact logical analysis of the sentence, so as to see what he has to say, but must exercise his judgment and taste (not to say knowledge) on the choice of words and phrases which will best answer the purpose, and truly represent the clearness, energy, or eloquence of the author. To do this faultlessly requires of course the matured judgment and refined taste of the accomplished scholar; but the very effort involved in the attempt to grasp the spirit of the author, to rise to the elevation of his thoughts, and to gain the sympathy of others for them by an adequate and worthy representation of them in his native language, cannot but elevate his own mental stature. "We strive to ascend, and we ascend in our striving."

The advantages of such a course as I have now sketched must be acknowledged to be very great, although only *the language* is as yet under consideration. But there are two or three other points that must not be omitted. The first of these is the value of the strict grammatical analysis required. The process of eliciting light out of darkness, before

described, can only be accomplished by one who is armed with grammatical power. Without this, the efforts made to communicate with the soul of the author must be feeble and ineffectual. It is one of the special objects of the course I am advocating, to cultivate this faculty, because in doing so we are in fact cultivating to a high degree the reasoning powers of the pupil. The construction of words in a sentence does not depend upon arbitrary laws, but upon right reason, upon the exact correspondence between expression and thought, and therefore "good grammar," as has been well observed, "is neither more nor less than good sense."*

A wise teacher—one who wishes to quicken, and is anxious not to deaden, his pupil's mind—will not, of course, force upon him those indigestible boluses, the technical rules and definitions of syntax, *before* training him to observe the facts on which the rules are founded; but will accustom him to the habit of reasoning only *in the presence of facts*, which is so valuable at all times. The habit of reasoning on the construction, the syntax of one language, is, of course, generally applicable to others; and its practice in connection with Latin tends by an amount of experience which countervails all theory, to prepare the pupil for learning his own language thoroughly.

In addition to the grammatical advantage just named, there are two others I would mention, which prove that learning Latin is a good preparation for the better knowledge of the mother tongue. The one is, that as so large a part of the vocabulary of the English language is derived from the Latin, either directly, or indirectly through the French, no accurate study of the former can be accomplished without a fundamental knowledge of Latin. According to Archbishop Trench, thirty per

* As the analysis of sentences is now become a regular part of the study of English in all good schools, I would strongly recommend its also being made ancillary in the study of Latin. Lessons on the essential elements of a sentence, on "subject" and "predicate," and on the predicative, attributive, and other relations (such as may be found admirably displayed in Mason's English Grammar), should form the basis of the teaching of Latin, as they do of English, syntax. Their application to Caesar, Cicero, or Virgil, would be not only most valuable in itself as mental training, but would greatly lessen the difficulties felt by a boy in dealing with complicated constructions which are new to him.

cent. of the vocabulary actually used by our authors is derived from the Latin; and the proportion is still greater, if we analyse the columns of our English dictionary, where the words are what is called "at rest." Indeed, to so great a degree have we admitted these aliens into our language, that we have learnt to attach Latin prefixes and suffixes to pure English roots, so as to form new and hybrid compounds. But further,—and this point is less obvious than that just adduced,—as almost all our greatest authors were trained in the classical school, both their vocabulary and phraseology, their language and their thoughts, bear a characteristic stamp upon them which can only be fully appreciated by those who have undergone a similar training. It is not too much to say that many exquisite graces, both of thought and expression, in the works of Bacon, Milton, Sir T. Brown, Jeremy Taylor, Sir W. Temple, Gray, Young, Cowper, and others, must elude the notice—and so far fail in their object—of a reader not qualified to meet the authors as it were on their own ground.* And may I add that, as far as my own observation goes, by far the most enthusiastic lovers of our own language and literature are the votaries of classical learning. They love more because they can appreciate better.

But it will be thought that I have sufficiently pleaded the cause of Latin as far as the language is concerned. I must, therefore, devote a few words to its literature. In a course such as I have proposed, and which I would commence at 12, with the idea of carrying it on up to the age of 18, and employing in it half the hours of every school day, and which would comprehend, besides the study of the language, such cultivation of geography, history,

archæology, &c., as would be required for the elucidation of the text, and also the parallel study of English literature, we could not hope to read many authors. Indeed, faithful to the principle, *multum non multa*, I would not even attempt it. A selection of the best might be made, to be studied on the principle that they were to be actually known, not merely "gone through,"* by means of which not only would the pupil profit by the invigorating discipline I have described, but be subjected to the enlarging and refining influence which would place him in communion with some of the master spirits of antiquity, and therefore give him an introduction to those great authors of all modern times whose labours have tended to form the civilization of Europe. In no other way can he so well be introduced to the commonwealth of letters, and be made free to avail himself of its privileges. The fact that these finished works of literary art still survive amongst us, as real substantial powers whose influence cannot be gainsaid, is a wondrous proof of their merit as models of composition. They present us with histories which still enlighten and instruct men in the art of government, with oratory which still speaks in trumpet tones to the human heart, with poetry still "musical as is Apollo's lute"; in short, with matter which, however now disparaged, has served in successive ages both to furnish men with thoughts, and to teach them how to think; so that in truth, though styled dead, they are, in the highest sense, ever living; having (to use Hobbes's eloquent expression) "put off flesh and blood, and put on immortality."

But I must pass in review a few of the objections commonly taken against the positions I have maintained in this paper.

1st. Some object to the very principle of a central or fundamental study, and denounce it as a fundamental fallacy. Since it is admitted, they say, that it is not so much the subject as the manner of learning it that constitutes the discipline, one subject is as good as another; and as it is a matter of great importance to interest the pupil, we had better adopt subjects *pro re nata*, which seem likely to accomplish that object, without respect to their rank in the circle of knowledge. We may thus se-

* Examples are numberless: just three or four occur at this moment. Take Milton—

"Satan exalted sat, by merit raised

To that bad eminence."—(*Par. Lost*, ii. 5.)

"The undaunted fiend what this might be admired;
Admired, not feared."—(*Par. Lost*, ii. 677.)

"That wise and civil Roman, Julius Agricola."
(*Areopagitica*.)

"Sadness does, in some cases, become a Christian, as being an index of a pious mind, of compassion, and a wise, proper resentment of things."—(*Jeremy Taylor*.)
"Present us, O Lord, with thy most gracious favour."
(*Book of Common Prayer*.)

"This proud man affects imperial sway."—(*Dryden*.)

It is obvious that a mere English scholar, uneducated in classics, would not, of himself, see the exact meaning of the words in italics.

* See Appendix, D.

cure the object in view without the difficulty, perplexity, hard work, and sometimes even tears, which are attendant on a stricter discipline, and which often set the pupil against learning altogether. To refute this objection, I should have to repeat much of my previous argument, in which you will remember I contended for the upholding of one subject, or at least very few subjects, on the principle that while, with regard to some, we may be contented with a general knowledge, there should be one at least which should be learned as well as possible, and serve as a sort of standard of comparison. I accept, however, these objections as valid, on condition that those who uphold them will promise that their pupils shall not shirk the drudgery, the drill, which must be undergone in the learning of any subject whatever, and which often constitutes the most valuable part of the process; that in teaching music they will strictly require the "practice" and also the "grammar of music;" in teaching languages, perfect grammatical analysis; in teaching science, rigidly close attention to details, however irksome, and to every step of the reasoning properly deduced from them. If the objectors accept this test, they surrender the position that the study is to be accommodated to the pupil, and therefore tacitly allow the principle of a training subject; if they do not, they are driven back upon the Chrestomathic curriculum, and the idea of real education, as I understand the term, is given up.

2nd. It is maintained that if a leading subject is desirable, modern languages, or our own, would more usefully occupy that position.

First, with regard to the modern languages. Their eminent claims to a high place in our curriculum are at once admitted. They have a great practical value as languages; and their literatures are brilliant and attractive, and fraught with modern interest. Both French and German, too, have affinities with English, the one as being a daughter of that paternal stock from which we derive so much, and the other as belonging to the great Teutonic family of languages, of which ours is also a member. Then, in consequence of the increasing intercourse between nations, they are becoming every day more and more useful; and lastly, involving as they do many of the advantages claimed for Latin, they are much

more easily and rapidly acquired. These are valid reasons for admission into the curriculum, but not for taking the leading place in it. As to French, so many of its words resemble our own, and its construction is apparently so simple and transparent, that a pupil is tempted to guess or scramble at the meaning, rather than carefully approach it by thoughtful consideration, as he must do in Latin. Without dwelling on this as an evil in itself, I must insist on it as a great disadvantage in a training subject. A certain amount of resistance, enough to encourage effort, and not enough to intimidate, is an advantage rather than otherwise to the pupil. It serves to detain him awhile in face of the difficulty, and gives him the opportunity of estimating both it and the resources with which past experience has furnished him for its solution, and thus trains the mind to encounter successfully other difficulties. On the other hand, as we avowedly learn French and German more for practical than literary purposes, more as means than ends, the less resistance we meet with, the more rapid the acquisition, the better. The training subject is, however, in a certain sense, the end itself; and losing time in acquiring it may be an ultimate gain. The same general remarks apply, though less strictly, to German, which I have recommended as a substitute for Greek.

Secondly, as to the claims of English to occupy the leading place. The main objection to this claim, as far as the language itself is concerned, is that we are, as is sometimes said of a material object, too near to see it. We must stand at some distance from it, in order to comprehend its form and features, or, which is often easier, study the form and features of something else of the same kind, and then apply the knowledge thus gained to the case in point. Those who ask us to study the general principles of grammar, by the acknowledgment of all so valuable, in our own language first, pretend that they are substituting the easy for the difficult; but it is not so. The real difficulty is to abstract the clear and transparent medium in which our ideas circulate, and to view it by itself. So with the study of human nature; obvious as it seems to look at home, to know ourselves, to watch the operations of our own hearts and minds, yet general experience admits that it

is far easier to gather its principles from observing the actions of other men projected, as it were, before our view, and favourably adapted for our examination. Our own language, then, is to be the object, rather than the means, of our pupil's training. Throughout his entire course his training in another language is preparing him most effectually to learn his own, and the practical application of the disciplinary power should keep pace with its attainment.

Another objection against the spirit of the method I would recommend has been taken, and may be deserving of a brief treatment. It is said that much of what I have described is simply "drill," and that it is absurd to expend a great amount of labour on mental gymnastics, merely for the sake of the discipline, while, by taking up a more suitable subject, we may get both discipline and knowledge together. Why, says the objector, make a postman, who has to walk about all day, go through a preliminary drill every morning, since he gets his exercise in his work? And the argument seems to be, that exercise for the direct purpose of developing power, which may be developed by ordinary action, is undesirable. Without attempting a full reply to this objection, I would however suggest, in the first place, that, if logically carried out, it would abolish education altogether. If the ordinary spontaneous action is sufficient, teaching is tyranny, for it implies that the pupil must be constrained. Why not allow the child to wander about and play from morning to night, "at his own sweet will"? His senses and his thoughts will be employed in some way or another, and practice will make perfect. No teacher, however, adopts such principles as these, nor are they worthy of serious refutation. Secondly, I would remark that the practice of all professed trainers, whether of men or animals, refutes the objection. In order to make a soldier, it is generally thought well to keep him on the parade-ground a long time, doing goose or other steps, which he is not to use at all after the training is over. So it is with music, dancing, riding, rowing, and other accomplishments, in which the training exercises are the essence of the teaching. The teachers of these arts consider *practice* so

valuable, so indispensable, as a means to the end they have in view, the attainment of complete command over them, that they recommend constant repetition of the same exercise until it is thoroughly mastered, rather than rapid advancement to the next stage of knowledge; so that for a while—to the horror of the objectors just quoted—they treat the means as if they were the end. The usual success of this policy may perhaps be allowed to pass as an argument for its continuance. This view, of course, does not satisfy those who think that everything should be made pleasant to a child—that he should have no experience of difficulty, or trial, or *ennui*.* Such is not, however the spirit of the old system. We consider that the man who has not encountered and overcome difficulties is only half a man. Nor would we be so little friendly to the child as to remove them all from his path, and leave him unwarmed and unprepared for those which he must meet with in his journey through life. If the result of the training be that the pupil comes forth from it firm in mind and limb, robust and well developed, in perfect health and capable of enduring fatigue, we may be well contented with these as the results of the process that he has gone through.

And now, before closing my paper, I would make a few remarks on the pretensions of science to supersede—for that is what some reformers aim at—the classical training of our schools. I have shown my appreciation of the great value of science, not only in itself, but as a means of education; but I confess that I have not, never having been enlightened on this point, a clear idea of the manner in which it is to be taught, so as to be a real mental discipline in schools. Those gentlemen—one of whom we proudly include in the governing body of our College—who a few years

* This too is one of the notions of Mr. Spencer. Everything is to be made easy and delightful. He forgets that this is not really consistent with his own idea of education as a preparation for life. A practical teacher would remind him of the established dictum, *On ne s'instruit pas en s'amusant*. Every study is, indeed, to be rendered *interesting* to the pupil. The work of the teacher fails if he does not accomplish this. The apt teacher, however, succeeds, not by amusing his pupil, but by sympathising with him, and thus gaining his confidence—by understanding and entering into his difficulties—by encouraging him with word or look, when he is puzzled, —never intruding help when it is not needed, never withholding it when it is.

ago, at the Royal Institution, pleaded so eloquently the claims of chemistry,* physics, philology, physiology, and economic science, to be adopted in the curriculum as *branches of education for all classes*, meant of course that all these subjects were to be introduced. Even lately, two gentlemen, every way competent to speak upon the subject, have urged in this room the claims of botany and zoology as branches of education *for all classes*. We have, then—breaking up Professor Tyndall's "physics" into mechanics, hydrostatics, optics, pneumatics, sound, heat, &c., some fifteen or twenty subjects claiming admission into the school curriculum. I again ask, how are they to be taught? Each of these accomplished men of course considers his own special subject as worthy of every attention, and would not be satisfied with the communication of a mere smattering of it as representing his idea of its value. Would any one of them be contented to hand over his subject to either Mr. Bentham or Mr. Spencer to teach? Certainly not. They would all wish the subjects which they know so well, which they appreciate so highly, and on which they have expended so much thought and labour themselves, to be thoroughly taught—to become a real possession of the pupil. But how is this to be done? That is the question, the satisfactory solution of which will do more to advance the claims of science to admission into the curriculum than all the arguments that have hitherto been adduced. We hear the pleadings in favour of each fair claimant for our regard, as she appears before us,—we admire her charms,—we admire all the charms,—but we cannot marry them all; we cannot take them *all* for better, for worse, to have and to hold, &c.

What, then, are we to do? We not only admit, but claim, the aid of science in education. That general enlightenment—that apt handling of business—"faculty," as some people call it; that appreciation of cause and effect; that comprehension of details under general laws; these, which are the proper fruits of scientific culture, would form the best corrective of Literature, would simplify and give a definite aim to her somewhat vague, though

noble, aspirations. But the question returns, How is science to be taught? It will not be pretended that the scientific mind is formed by a lecture once a week on electricity or chemistry, as the case may be, nor by the occasional cramming of a text-book on the subject. The advocates of science mean something far transcending this, or they mean just nothing. But I am compelled to say that their utterances on the practical part of the subject are singularly vague and unsatisfactory. "Teach science," they say; but then Professor Huxley does not mean, teach Pneumatics, he means, teach Physiology. Professor Tyndall means by these words, Physics, and not Botany, and so on. Each thinks, and naturally enough, that his own special subject is the one to be taught, and therefore the general recommendation involves the teaching of them all, and we come back to the Chrestomathic idea which, presented *pur et simple* to these authorities in science, would be indignantly rejected. I have read with much interest the evidence given before the late Commission on Public Schools, by those eminent men, Carpenter, Lyell, Faraday, Hooker, Owen, Airey, and Acland. Whatever such men say must, of course, be interesting; but I confess that the impression left on my mind was not that of profound admiration for their practical "faculty." Their remarks and suggestions—very valuable, no doubt, as "hints"—leave the real difficulties of teaching science in schools untouched; and indeed will be found so various and inconsistent as frequently to neutralize one another. With very few exceptions, these eminent men scarcely seem to have perceived, or at least appreciated, the fundamental principle, that teaching science does not mean teaching electricity, or optics, or chemistry, or geology, but *training the mind to scientific method*; and that if all the "ologies," from A to Z, are to have a chance of occupying the field, a general *mêlée* will be the result, which will effectually frustrate the object. In that case, all the sciences might be *taught*—if that is the word for it—but science would not be *learned*. Dr. Acland's evidence is, however, very much to the point. He had clearly given thought to the subject, and handled it like a man of business. He recommended that Physics, Chemistry, and Physiology should be required of

* The lectures were delivered by Drs. Whewell, Faraday, Latham, Daubeny, and Hodgson, and Messrs. Tyndall and Paget.

all educated men, and that the two former should be learnt at school. When reminded, however, that the Matriculation Examination of the London University comprised these and other cognate subjects, he gave an opinion, in which I confess I agree, upon the value of such scientific teaching as that examination presupposes. It is so much to the point that I will quote it:—"I may say, generally, that I should value all knowledge of these physical sciences very little indeed unless it was otherwise than book-work. If it is merely a question of getting up certain books, and being able to answer certain book-questions, that is merely an exercise of the memory of a very useless kind. The great object, though not the sole object, of the training should be to get the boys to observe and understand the action of matter in some department or another, and though I am perfectly aware that what is called practical knowledge, if merely manipulatory, on any subject whatever, is a humble thing enough; yet, on the other hand, I must say that the utmost amount of knowledge on these subjects, without that practical and experimental knowledge, is to most persons nearly as useless. You want the combination of the two; and for youths, I value very little the mere acquisition of a quantity of book-facts on these subjects. I want them to see and know the things, and in that way they will evoke many qualities of the mind which the study of these subjects is intended to develop." Thus speaks the true teacher and votary of science. His anxiety is to form the scientific mind, not merely to communicate information on science. From a great part of the evidence of the men whose names I just quoted, you can only gather a commentary, by "eminent hands" certainly, on the text, "That the soul be without knowledge, it is not good;" which—though not a Solomon myself—I would supplement by adding, "That the soul attempt to grasp all knowledge, it is not wise."

Dr. Acland, it will be observed, recommends that chemistry be adopted as a general study; and from some little opportunity I have had of seeing that this subject may, to a certain extent, be adopted into the school course, I should have thought it a wise suggestion. But observe what a practical teacher of chemistry on a large scale, Dr. Völcker, of the Cirencester Agricultural College, says on this point:—

"As an educational means," he says, in a letter published by Mr. T. Dyke Acland, in a document prepared by the latter for the Commission, "chemistry is not to be compared with other means of training the mind. . . . The direct benefit resulting from the teaching of analytical chemistry in schools is *nil*. . . . I grant that two or three boys out of fifty may be benefited by practical instruction in experimental and analytical chemistry; but am also bound to add, that the rest only waste the time which may be more usefully employed. This is the result, not only of my own personal experience, but also that of many of my scientific friends in this country, at least of those who love science and desire its prosperity. Moreover, I would direct your attention to the fact, that the attempt has been made in Germany, on a large scale, to teach chemistry practically in schools for lads under sixteen years of age, and has proved so complete a failure, that it has been all but universally abandoned in my native country."

It appears, then, that there are difficulties in the way of teaching science, even where the subject is well chosen, the field comparatively limited, and the means and appliances amply provided. Dr. Völcker's cold and dry experience does not perfectly accord with Mr. Spencer's enthusiastic theory, and does not go to prove that children eagerly hunger after scientific knowledge as they do after their daily food. Of course it is easy to throw the blame of failure on the teacher; but Dr. Völcker's words are too definite, and apply to too large an area to admit of this. Still, there can be no manner of doubt that science is immensely attractive; that it is favoured by the spirit of the age; and that it will and ought to be extensively taught in schools. But its educational advocates have, as yet, no practical plan involving good scientific discipline, and no well digested results, to show. Their voice will be powerful enough when they have, and will command the attention of all. As the case now stands, we have practice on the one side, and theory on the other. An amount of experience which no one can effectually gainsay attests the value of the Classical training; while an amount of theoretical plausibility, which no sane man can affect to despise, supports the claims of Science to a trial. Why should there not be a compromise? Intellectual education is strictly the training of all the mental faculties in the best way. Science teaches better, that is, more directly and thoroughly, than any other study, how to observe, how to arrange and classify, how to connect causes with effects, how to

estimate the practical value of facts. Why not adopt it then as the proper complement of the literary element? Let botany be taught quite early in life,—in the first stage of instruction,—together with such parts of physics as give general views of science, and interest the mind in it. In the second stage, let some one or two branches of physics be taken as the basis of a sound training in science, with a view to the formation of the really scientific mind.* The classical course would thrive the better for the collateral study of science, and the scientific would thrive the better for the classical. Why should not both work harmoniously together in the curriculum?

The principle appears to be sound in general, that the spirit of the age should be represented in the education of our schools;—this is the reforming element of the question.

* See Appendix, E.

At the same time it seems equally reasonable that we should not forego our hold on that mighty past of which the present is the legitimate offspring;—and this is the conservative element. It is well for the son, when prepared for the world of life, to leave his father's home and create one for himself. It is not well that he should do so too early, before he is prepared. Physical science may become—probably is destined to become—the organic representative of the civilisation of the age. At present it cannot be so considered; and its claims, therefore, to take the lead in the curriculum of education are inadmissible. While it is labouring to attain that position, I would advise its votaries to aid those of classical instruction in securing the great advantages of the training I have recommended. The minds so prepared would be the fittest of all for sharing in the researches of science, and promoting its triumphs.

APPENDIX.

A. (See page 11.)

In a very interesting address of Lord Ashburton's, at the Meeting of Schoolmasters in Manchester, in 1853, we find the following remarkable words:—"In this *progressive* country we neglect all that knowledge in which there is progress, to devote ourselves to those branches in which we are scarcely, if at all, superior to our ancestors. In this *practical* country, the knowledge of all that gives power over nature is left to be picked up by chance on a man's way through life. In this *religious* country, the knowledge of God's works forms no part of the education of the people, no part even of the accomplishments of a gentleman." It appears from this passage that Lord Ashburton does, after all, consider this to be a *progressive*, *practical*, and *religious* country, though nothing would seem to be done to make it so. The work goes on, and bravely too, in spite of the assumed general low level of attainments, and the indifference with regard to progress. Lord Ashburton does not see that there is, in fact, no "common measure" between the progress of a nation and that of an individual. The time may come when the progress of knowledge and the practical applications of it may be tenfold what they now are. But we shall still have to consider the average capacity of the race as a "constant quantity," and frame our curriculum accordingly. The progress in question arises from the impulses generated in the minds of those who, being endowed beyond their fellows, stand forth as their leaders to the promised land; but the common mass have to begin at the beginning still in their instruction, just as if none had gone before them.

B. (See page 17.)

The following valuable remarks on the cultivation of the observing powers are from an "Introductory Lecture" on the Educational Uses of Museums, by the late Professor Edward Forbes, 1865:—

"The great defect of our systems of education is the neglect of the *educating* of the observing powers—a very distinct matter, be it noted, from scientific or industrial *instruction*.

It is necessary to say this, since the confounding of the two is evident in many of the documents that have been published of late on these very important subjects. Many persons seem to fancy that the elements that should constitute a sound and manly education are antagonistic; that the cultivation of taste through purely literary studies, and of reasoning through logic and mathematics, one or both, is opposed to the training in the equally important matter of observation through those sciences that are descriptive and experimental. Surely this is an error. Partisanship of the one or other method, or rather department, of mental training, to the exclusion of the rest, is a narrow-minded and cramping view, from whatsoever point it be taken. Equal development and strengthening of all are required for the constitution of the complete mind; and it is full time that we should begin to do now what we ought to have done long ago."

C. (See p. 19.)

"The purpose of Milton, as it seems, was to teach something more solid than the common literature of schools, by reading those authors that treat of physical subjects, such as the *Georgic* (*i.e. agricultural*) and astronomical treatises of the ancients. This was a scheme of improvement which seems to have busied many literary projectors of that age. Cowley, who had more means than Milton of knowing what was wanting in the embellishments of life, formed the same plan of education in his imaginary college.

"But the truth is, that the knowledge of external nature, and the sciences which that knowledge requires or includes, are not the great or the frequent business of the human mind. Whether we provide for action or conversation, whether we wish to be useful or pleasing, the first requisite is the religious and moral knowledge of right and wrong; the next is an acquaintance with the history of mankind, and with those examples which may be said to embody truth and prove by events the reasonableness of opinions. Prudence and justice are virtues and excellencies of all times and of all places; we are perpetually moralists, but we are geometricians only by chance. Our

intercourse with intellectual nature is necessary; our speculations upon matter are voluntary and at leisure. Physiological (physical?) learning is of such rare emergence that a man may know another half his life without being able to estimate his skill in hydrostatics or astronomy; but his moral and prudential character immediately appears. Those authors, therefore, are to be read at schools that supply most maxims of prudence, most principles of moral truth, and most materials for conversation; and these purposes are best served by poets, orators, and historians." (Johnson's *Lives of the Poets*, vol. i. p. 92.)

D. (See page 23.)

Merely as a suggestion, the following scheme for the study of Latin may be proposed:—

1. Dr. W. Smith's *Principia Latina*, Parts I. and II.
2. Cæsar—*De Bello Gallico*.
3. Virgil—*Eclogæ*, books 1, 3, 4, and 5.
Georgica, books 1 and 2.
Æneis, books 1, 2, 3, 6, and 12.
4. Cicero—*Oratio pro Milone*.
Orationes in Catilinam.
De Amicitia.
5. Livy, books 1 and 21.
6. Terence—*Andria*.
7. Tacitus—*Agricola*.
Annales, books 1 and 2.
8. Horace—*Odæ*, *Epistolæ*, and *Ars Poetica*.

This matter should be thoroughly studied in the spirit of the method described in the text (pp. 13, 20, 21), and would require therefore to be gone over, parts of it at least—the Cæsar and Virgil—three times: first very slowly, weighing and investigating nearly every word; the second time less deliberately, improving the translation and enlarging the illustration; and the third time rapidly and in good English, so as to evince familiarity with both language and matter. The passages from Virgil and Horace should be committed to memory.

E.

Subjoined is a scheme of an amended curriculum:—

FIRST STAGE OF INSTRUCTION.

(From about eight to twelve years of age.)

First Division (about two years).

1. Reading, Spelling, and Writing.
2. History, Scriptural and English.
3. Geography, Topographical and Physical.
4. French, Elementary Speaking and Reading.
5. Lessons on Objects.
6. Lessons on Words.
7. Arithmetic, chiefly Mental.

Second Division (about two years).

Same subjects, as far as may be necessary, with

1. Arithmetic, as an art generally.
2. Botany, Structural and Systematic.
3. Elementary Physics, general facts and phenomena.
4. English Grammar, Parsing and Analysis of Sentences.

SECOND STAGE OF INSTRUCTION.

(From about twelve to sixteen years of age.)

First Division (about two years).

	Proportion of time, taking 40 hours per week for school-work.
1. Latin, taught as a training subject	20
2. French and German, practical mainly	5
3. Mathematics, especially Euclid ...	5
4. Physics, taught as a training sub- ject	5
5. English Language and Literature	5

Second Division (about two years).

1. Latin (time diminished)	10
2. French and German (time increased for more composition)	10
3. Mathematics — analytical, with practical applications	5
4. Chemistry or Human Physiology	10
5. English Language and Literature	5

Of course "Latin" and "English" both include the subjects—such as geography, history, archæology—which may be necessary for their illustration.



